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PUBLIC HEALTH PAPERS,

No. 1.

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ON THE RELATIONS OF HEALTH BOARDS AND OTHER
SANITARY ORGANIZATIONS WITH
CIVIC AUTHORITIES,

BY

ELY McCLELLAN, M. D.
SURGEON U. S. ARMY.

AN ADDRESS DELIVERED, BY REQUEST, BEFORE THE BOARD OF
HEALTH OF THE STATE OF GEORGIA, JANUARY 8,
1877, IN THE SENATE CHAMBER, ATLANTA, GA.

Published by order of the Board of Health.



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Public Health Papers,

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On the relations of Health Boards and other Sanitary Organizations, with Civic Authorities.

By ELY McCLELLAN, M.D.,
Surgeon U. S. Army.

That the *wealth of a nation*, depends in a great measure upon the *health of the nation*, was recognized by America's earliest and most distinguished philosopher. "Health is wealth," was an aphorism of Franklin, and is certainly the truest and most suggestive of the many pithy utterances to be found in Poor Richard's Almanac. Few individuals, without health, can acquire wealth, and indeed but few who are possessed of wealth, but denied the boon of health, can maintain their grasp upon that which they have.

The great financiers of the nation, the Astors, the Stewarts, the Vanderbilts, and others of less note, were of rugged frame and of constitution so robust, that the mental and physical fatigue which would have prostrated men of feebler power, passed them without leaving a trace.

If this is true, as regards individuals, so is it equally true as regards nations. A healthy nation is inevitably a wealthy nation. Her ships navigate all seas, her armies are invincible on land. But, so soon as the inevitable results of sanitary negligence occur, and unheeded, are allowed to obtain strength and virulence, then the national glory subsides, and more healthy nations will absorb all that may remain.

The truth of these assertions is proved by history, both ancient and modern.

If it be true that *health is wealth*, it is equally true that *knowledge is power*, and sanitary knowledge is a most powerful engine by which the health of a nation may be secured and national prosperity preserved.

Among the older nations of the earth, this truth is recognized.

Among nations who are favored with the understanding that masses of humanity cannot safely be left to work out their own unrestrained wills, but require an enlightened government, which may compel each individual atom of humanity to so conduct himself, that he may not endanger his neighbor, statesmen are in-

terested in promoting all sanitary measures, and sanitarians are the recipients of royal favors.

On the other hand, nations who are governed by the masses, among whom the vote of the man of education and refinement is lost beneath those of the ignorant and superstitious, authorities hesitate long before they adopt measures which may in the next election influence votes against their party: and it is only when the explosion which might and should have been prevented occurs, that any efforts at sanitary reform are attempted.

Among the last, the sanitarian is looked upon with distrust. It is said that he is attempting to deprive the people of their rights—that he demands an expenditure of the public funds, for which they can see no return—that he is an alarmist constantly harping on the subject of disease—that he wishes to make capital for himself of the work of others—that he desires the establishment of a bureau of which he is to be the functionary. For these reasons, and others equally cogent, he must be suppressed; and to accomplish this, all that human ingenuity can devise is brought into action; or even when decided and absolute opposition is not made, the theory of "how not to do it" becomes equally effective.

But how different the conduct of such persons, when malignant disease devastates communities! Who cry more loudly for aid? Who more persistently persecute the local authorities, for what might have been? Frantically they strive to repair the broken dam, to arrest the rush of the mighty waters—but how futile are their efforts; and they are filled with despair. We ask you, fellow-men, after dark and weary days, when the Angel of Death has hovered over a prostrate community, upon whom should the responsibility rest? Who has dimmed bright eyes and broken happy hearts? Who caused yonder chair to stand vacant? Who sent yon widow and her little ones out into the cold world? Who robbed that strong man of *her* who was dearer to him than life?

Was it the man, who, while plenty and prosperity were in the land, lifted his warning voice and bade you beware of the time to come—who offered you the means of escape—who put into your hands the weapon with which you might have arrested the first aggressive movement of your foe—or was it he who lulled you to rest and security, to "a little more sleep, a little more slumber, a little more folding of the hands to sleep?"

It is surely a matter to be lamented, that in America at the present day, public health is held to be subservient to individual, or to corporate interests; that it is absolutely true that human life is held to be of less value than the financial in-

terests of commerce, and that the organization of health institutions is invariably met with bitter and unrelenting opposition.

At the present day but thirteen of the Federal States have authorized the organization of boards of health. Of these but eight are upon the eastern frontier of the nation, viz: Massachusetts, Rhode Island, New Jersey, Maryland, Virginia, Georgia, Alabama and Louisiana. California stands alone in the occident, and Michigan, Minnesota and Wisconsin represent the north-west.

Of those portions of the nation subjected to territorial government, the District of Columbia stands alone.

Of these State Boards, the eldest and most efficiently organized is that of the State of Massachusetts. Next in rank, come those of the northwest and California. Of those which remain, what can be said? Without proper appropriations, without power, subjected to official and personal animosities, what can they do? What they have done, what they can do, is demonstrated by the magnificent results obtained by the State Board of Health for Louisiana. That board, although harassed almost beyond human endurance, by legislative neglect, by executive interference, by legal injunctions, by debt, and by all else that petty spite could procure—has demonstrated beyond a peradventure *that yellow fever is subservient to disinfection*. For this alone, the executive officers of that board, deserve from the world more, we fear, than they will ever receive.

Throughout the country many local boards of health for cities and towns have been established. The organization and composition of these boards, in the vast majority of instances, cannot be considered but as objectionable. They are a step in the right direction, it is true, but in their composition there exists much which prevents the full accomplishment of the object for which they were created. Exceptions to this expression of opinion might and perhaps should be made in favor of the cities of New York and Philadelphia. But the organization of the health board of the last named of these two cities is far behind that of the former.

Shall boards of health, as administrative bodies, be the subordinates of political organizations, or shall they, in the exercise of their functions, be clothed with autocratic power, which will enable them to issue edicts upon all matters pertaining to the public health? is, at the present, a query of the utmost importance to the general public.

It is true that health organizations must owe their very existence to the body politic; that without the exercise of the legislative power, the necessary authority cannot be assumed; but these are only more cogent reasons why the general assemblies of the States, in the exercise of their supreme power, should frame just laws,

founded upon known sanitary requirements; and having provided for the organization of health boards in all communities within their jurisdiction, *see to it*, not only that compliance with the law be enforced by proper penalties, but that the health organizations themselves be clothed with the power of bringing offenders to justice.

Sanitation can no longer be looked upon as an elegant accomplishment, to be acquired at odd moments of busy professional life. It can no longer be considered as one of the perquisites of successful politicians, or as an amusement of tradesmen; but it is an exact and positive science, so broad and comprehensive in its bearings that no single life has yet been long enough to afford time in which each detail may be mastered; and from necessity special lines of sanitary study have been adopted by individual students, whose aggregate studies have contributed power to sanitary knowledge. It is therefore a matter of primary importance, that when legislative authorities proceed to enact laws, which shall govern the vital interests of commonwealths, all secular and local prejudices should be laid aside, and perfect sanitary legislation should be attempted.

But what service to the general public can health boards render? is a question which has been, and will continue to be, asked. The inhabitants of inland counties fail to realize that there exists any just reason why they should be taxed to prevent disease outside their county limits. Residents of inland counties can see no reason why they should be asked to consider the health of seaboard counties. They cannot appreciate the fact that the cost of a great epidemic of acute infectious disease, in any large city of the State—an epidemic which paralyses trade and commerce, which depreciates property, which sweeps from existence numbers of the producing classes—must ultimately come out of their pockets. But such is the absolute fact, which has but recently been demonstrated to the inhabitants of the State of Georgia.

Savannah, paying about one-thirteenth of the general tax for the support of the State Government of Georgia, is rendered almost bankrupt by an epidemic, which occurred during months when the tide of commercial prosperity should have been at its height. How is the city to meet this tax? The government of the State must be maintained! By whom shall the Savannah quota of the State tax be paid? Manifestly by the tax-payers of other sections of the State. Therefore, one item of the cost of this epidemic must come from the pockets of the classes to whom we have referred.

A State Board of Health, constituted with ample power, and

equipped with a liberal appropriation, will serve the general public—

I. By a Sanitary Survey of the State.

By this a thorough inquiry into the causes affecting the health of the various counties, cities, towns and villages is accomplished.

II. By the Establishment of a System of Vital Statistics.

By which an accurate record of marriages, births and deaths will be obtained, with a registration of prevalent diseases.

III. By the Sanitary Prevention of Infectious Diseases.

By which the agency of common carriers in the transportation of diseases will be restricted, and the most approved measures adopted to "stamp out" disease whenever it may appear.

Under the first would be included sanitary engineering, as drainage, sewerage and general sanitary police, public water supplies, food of all characters, the sanitary supervision of public schools, hospitals, asylums, alms-houses, prisons, penitentiaries, burial grounds, manufactories of all kinds, and all places of public assembling.

From the institution of a system of vital registration is to be gained—apart from the very important legal status to which, in the course of a few years, such an office would grow—a most active agent in developing the resources of the State.

The subject-matter of the third head would include the sanitary supervision of common carriers, upon land and upon the water. No longer would railway or steamboat companies be permitted to transport infected individuals, fabrics or atmosphere, to infect healthy localities.

There would also be embraced popular instruction in hygiene, and the system of enforcement of sanitary police.

If such ends are to be attained, the organization and the composition of the boards by whom the laws enacted shall be executed is a matter of vital importance.

They should be composed of men of known and tried sanitary acquirements—men who have had an especial training in this branch of science—men who are able to weigh all matters of public hygiene, which may be presented to them, with unbiased and unprejudiced minds.

That such boards should contain a majority of medical men, is obvious. The work to be performed is such, that it demands minds trained as theirs have been, but associated with them should be men of ability, whose peculiar province it should be to act as authoritative advisors upon all points of finance, law and sanitary engineering.

Experience, however, has by no means made it clear, that the power of appointing the local members of such boards should be vested in the chief executive officer of the State, for Governors of States, although in the majority of cases gentlemen of irreproachable character, are more or less subjected to the caprices of party politics, and the same influences are most likely to govern, in great measure, the selection of individuals to fill all official positions.

It is suggested that the appointing power, if vested in the Supreme Court of a State—the appointments to be confirmed by the State Senate—would increase the efficiency of such bodies. It is not always the medical man who stands highest in the estimation of the community in which he resides; it is not always the most skillful and experienced practitioner who is the best sanitarian. The man who may most successfully combat the progress of an epidemic, may be most at fault in tracing its cause, or in instituting measures for its prevention. Indeed, experience teaches us that sanitation is a speciality which, when handled by the busy general practitioner, who has no time to look beyond his immediate surroundings, who measures *all he does not see* by his individual impression of what he *thinks* he does see; who is willing to allow nothing for the experience of others upon the cause of the same disease, in other localities, when they differ from what he thinks he observes within the limits of his own horizon, becomes an engine of incalculable mischief. Almost every individual here present can probably recall instances which bear out the truth of this assertion. There are at this day numerous communities in which the wildest speculative hypotheses are held upon the subject of infectious diseases, because of the teachings of some local practitioner, either in the past or in the present.

It is by no means intended to reflect upon the appointment of general practitioners to such positions, but it is urged that popular success and reputation for professional skill and experience is but a poor criterion of a man's sanitary knowledge; and that the search after that knowledge which is power will as often lead to the abodes of men whose lives have followed the old story—

“ Mental worry and toil !
Patient research and thought !
Gallons of midnight oil !
What returns have ye brought ?
To wait till patients come—
To sit till somebody sends—
To find and feel how narrow the sum
Of patients, patrons and friends ! ”

as to the office of the man upon whom fortune has showered the choicest favors.

In order to secure proper and harmonious working of a system for the preservation of the public health, all local boards should be subject to the authority of the State Board.

Local boards should exist for all counties in the State; upon them the civil authorities should be represented by the county judge and the county surveyor—but the medical members should be appointed by the State Board.

For all cities and towns whose population amounts to ten thousand inhabitants or over, a board of health should be appointed, upon the same basis.

The officer of each county and town who shall be designated to act as the registrar of vital statistics, should be provided with ample means to secure full and prompt compliance with the letter of the law.

It is a fact which has been so often demonstrated as to require no further argument to prove its truth, that men who devote their lives to scientific study are rarely possessed of greater pecuniary resources than that which affords a bare subsistence. The cost of scientific investigations is, in the majority of instances, simply enormous. A mechanic without tools or material is in no more pitiable condition than a scientist without books or instruments. But one exceeding great difference exists. The mechanic may supply his wants at but comparatively small cost, while the high rate at which scientific books and instruments are held, reduces the lives of most scientists to alternations of enthusiasm and despair.

Ample appropriations should be made for the expenses of health boards, the officers of which should receive remunerative salaries, and each member should be compensated for the time he may be required to devote to his official duties. We propose to show hereafter that these expenses, although they may in the aggregate amount to a large sum, still sink into utter insignificance when compared with the cost of a single epidemic of an infectious disease in one large city.

Surely it is a disgrace to ask medical men to perform the important duty of attempting to protect from disease the public health of a great commonwealth, of attempting the removal of all causes of disease, of doing much towards elevating the social and financial condition of the inhabitants, and yet, not only begrudge them compensation, but actually expect, or demand, that they not only abandon their private interests, but also defray their personal expenses while discharging their official functions.

During the past ten years, the United States have been visited by a series of acute infectious diseases; some of which raging with intense virulence, attracted demonstrations of public sympathy

throughout the nation, while others moving in a more restricted circle (although counting their victims by the score) occasioned but a passing notice.

The southern sea-board and the valley of the Mississippi, especially suffered from these infectious explosions. Asiatic cholera, yellow fever, typhoid, typhus, scarlet and relapsing fever, smallpox, erysipelas, puerperal peritonitis, diphtheria, dysentery, and cerebro-spinal meningitis, have each for a time had sway, and each subsided, only after many valuable lives had been sacrificed.

It is a matter of public regret, that when any of the great cities of the country were thus infected, the local authorities used great efforts to conceal its existence; nay, in some instances they did not hesitate to officially deny its presence within their corporate limits, and were only driven to an acknowledgement, when all control was lost, and the disease was invading alike, the homes of the rich and poor.

It is a matter of record that each epidemic of yellow fever and Asiatic cholera, which has occurred in the United States, was preceded by outbreaks of the disease, in foreign countries, with which the United States had commercial relations.

It is a matter of record, that each of these American outbreaks was preceded by the arrival of vessels from foreign ports, where the disease, at the time of their departure, was epidemic; and that the American epidemic occurred only after free and constant intercourse between the infected and healthy ports.

It is a matter of record, that, in each instance, the foreign epidemic of these diseases was sufficiently pronounced to have given fair, full, and timely warning of its existence to all American sea-board authorities; and it is further a matter of record, that the same authorities, so far from being upon the alert to detect the advent of the disease, adopted few and inefficient, or no sanitary precautions; and that, when the importation of the disease did occur, it found "hot-beds," telluric and atmospheric, already prepared for its reception, and it was allowed to germinate, bring forth fruit, and spread to the community before any measures were adopted to arrest it.

Is such madness manifested in any other municipal danger? Had a hostile squadron threatened the city of Savannah from the sea would her authorities have waited until the war-vessels had crossed the bar, had ascended the river, and were throwing their "shell" into the city before they commenced their measures of defense? Yet, although disease threatened this city from the Island of Cuba, no precautions were adopted. The port was practically left free and open to vessels from Cuban ports, and it was not until

days had passed, after the first cases of yellow fever had occurred, that any organized effort at its suppression was attempted.

During the months of June, July and August, 1876, one thousand two hundred and twenty-six deaths from yellow fever occurred at the city of Havana. This would indicate that an unusually severe outbreak of the disease had occurred. Matanzas, Cienfuegos, Trinidad and Santiago de Cuba—ports of the same Island—were also infected. Yellow fever prevailed upon the Island of Cuba until the close of the month of October.

During the months of June, July and August, 1876, eight vessels, manned by Spanish seamen, arrived at Savannah from the Island of Cuba. One of these vessels was from the port of Cardenas, one was from Matanzas, and six were from Havana. Six of these vessels discharged at the wharf of the Atlantic and Gulf railroad (on the extreme northeastern front of the city) an aggregate of seven hundred and thirty tons of ballast—six hundred and thirty tons of which was soil taken from the immediate vicinity of the city of Havana. Two of these vessels discharged at the wharf of the Georgia Central Railroad, in the extreme northwestern front of the city, one hundred and fifty tons of ballast of the same character. From these vessels, their crew with their clothing and bedding went into sailor boarding houses in the city.

A small quantity of the earth composing this ballast, taken from a pile of the same, and from about two feet below its surface, was placed in a test tube, which was afterwards filled with distilled water and allowed to stand for twenty-four hours, when microscopic examination revealed a considerable amount of organic matter. Sufficient time has not elapsed to allow this investigation to be prosecuted.

An examination of a quantity of this ballast was made by Mr. W. J. Land, Analytical Chemist of Atlanta, who reports—

The specific gravity of this ballast.....	2.315
The water (expelled at a red heat).....	7.582 pr. ct.
Nitrogenous organic matter.....	0.192 " "

We have been informed by Dr. B. M. Cromwell, of the State Board of Health, that during the investigations of that board at Savannah, he learned that Dr. W. T. Fray, of Savannah, had discovered in 1876, growing from some of the Cuban ballast which had been carried from the Atlantic and Gulf Railroad wharf to the upper portion of the city, an Indian plant, called the *Riedlea Hirsuta*, which is known to be a foreign tropical plant, and that he (Dr. Fray) had never seen the plant before, and was convinced that it was imported in the ballast.

The specimen was also identified by other botanists.

Such incidents strengthen the chain of circumstantial evidence.

Upon one of these vessels, at least, there is every reason to suppose that yellow fever had occurred, while riding at anchor in the Havana harbor. Upon two, deaths had occurred during the passage, but these, it was strenuously insisted by the master of the vessels, were not yellow fever. As yet, absolutely nothing is known of these vessels, prior to their arrival off Tybee Island; but this much is most positive, the disease did not exist in the city of Savannah, prior to their arrival, and although absolute contact of the first cases of the disease in that city with them cannot be traced, yet, the first cases occurred among persons who had been in their immediate vicinity, and who lived in the houses of the city nearest to the wharves at which they had been tied up to discharge ballast and take in cargo.

What stronger chain of circumstantial evidence could be forged? Time and future investigations may add facts which will amount to absolute proof of infection.

To cope with this invasion of exotic disease, there was a health officer, whose duties were confined strictly to the quarantine system in vogue at the port. This officer visited at Tybee Island all vessels from infected ports. The only measures of detention that he could employ was to order pilots to bring vessels to anchor off Tybee. The only measures of quarantine inspection in his power were to board said vessels, inspect their papers, muster and examine their crews. It was in his power to order the detention of any vessel at quarantine for a variable length of time, and this could be enforced by fine and imprisonment. He could order that certain measures for disinfection of vessels should be adopted, he could order that no communication should be held between vessels and the land; but there was no way provided him of causing these orders to be strictly complied with. After he left the deck of the vessel, he absolutely had no more control over her, save in the single particular of specifying the date at which she might come up to the city, than any other citizen of Savannah.

At this quarantine station there is nothing provided, save the bare anchorage. Cases of yellow fever or of epidemic cholera occurring upon vessels, must be treated upon the vessels; the sick can be segregated in no way.

It is a disgrace to humanity to longer tolerate such culpable neglect. It is an insult to the profession to ask medical men to assume the duties of the health office of the port of a large city, and furnish them absolutely nothing.

The present incumbent of this office at the port of Savannah, and his immediate predecessors are gentlemen who have performed their duties to the extent of their power, against whom no charge of neglect of duty could possibly be made, but the

health officer of that port has always been, and still is, powerless to act efficiently for the preservation of the health of the city.

There was a board of health for the city, consisting of the Mayor, ex-officio, ex-officers and the chief of police. The inspectors of the board were policemen, and policemen were employed to supervise the disinfection of infected localities.

No trained sanitarian was called to assume sanitary control, by this board of health. The overtures of the President of the State Board of Health, although not rejected, were utterly neglected, and wearily the days passed on, lower and lower the death cloud settled upon the devoted city, and a large detachment of its inhabitants were sent to join the already numerous cloud of witnesses who, at some period of eternity, will testify against the human ingenuity employed in disobeying the grand laws which Omnipotence has provided for the preservation of human life.

Of Savannah's financial losses, years may obliterate all trace. Prosperity may again exist within her walls, the vessels of all nations may make fast to her wharves—but will all this compensate for the lives that have passed? Will financial prosperity take the place of those whose eyes were closed, after hours of agony? Can money relieve broken hearts, lift up bowed heads, or render less acute the regret for those now resting beneath the great oaks of Bonaventure?

Had the board of health of the State of Georgia, in the summer of 1876, been possessed of sufficient power to have enabled it to assume sanitary control of the city of Savannah—had the President of the State Board the right to appear before his Honor, the Mayor, not as a fellow-citizen, advising the formation of a *corps sanitaire*, but as a superior, ordering that it be done—how different would have been the story!

We write emphatically and warmly. But the day has past when such matters should be handled with velvet gloves. The gauntlet of iron is more appropriate. The voices of the slaughtered at Savannah ring out from eternity. The cries of the widowed and the orphans in that City by the Sea, appeal to the nation to redress their wrong, by preventing, in the future, any repetition of this dark history.

It would be wrong to acknowledge, more so to intimate, that there rests aught of imputation upon the gentlemen who controlled the civil affairs of the city of Savannah during the past season. They are brave, earnest, conscientious men, who avoided no danger, who would have willingly sacrificed themselves to the public good. If they erred at all in this matter it was an error of education, not of either head or heart; for had they not been taught that there

was no danger to be apprehended from any foreign source? Had they ever been taught anything but the one-sided theory of local origin? The Springfield plantation, and its adjoining swamp lands, were in no worse condition than they had been during previous years, when there was no yellow fever. Bilbo's canal was in no more offensive condition than it had been in previous years, when there was no yellow fever. Why should they have expected an epidemic? Upon what grounds could they have based such belief?

Oh, men! Endowed with understanding minds, can you not see, that for nearly two hundred years this *local origin theory* has been a curse to America? Can you not see that no good thing has ever come from it? that it ends only in death? Is it not time that you turned your minds to other theories? Is it not time that you abandoned the teachings of your fathers, and thought for yourselves? Is it not time that you should judge the method by which this disease is diffused, by the facts attending all diffusions, and no longer trouble your minds over single and obscure cases?

It is pitiable to walk through the streets of Savannah this day, and listen to the oft-told story of the local origin of this disease. One would almost think that it was but an echo from the debates of 1797. Men, possessed of acute minds in the management of their personal affairs, will discourse by the hour upon the local causes of the yellow fever to be found upon the Springfield plantation, or in abandoned brick-yard ponds, or from the slimy banks of Bilbo's canal, and who ridicule the Cuban vessels; who consider that the surroundings of the Atlantic and Gulf railroad wharf, save in a malarial aspect, are unworthy of notice; who talk of the brick walls, and of the beautiful old trees that line the city streets, as factors of the disease; who consider quarantines as but reliques of the dark ages; who can acknowledge no human agency in the diffusion of the disease. These men stand willing and ready to admit ships from any yellow fever infected ports. Should another epidemic of yellow fever decimate the beautiful Forest City, upon their heads be the guilt.

The narration of such events naturally leads to the query,—what is the chief end of health boards? Are they called into existence to protect the financial interests of commonwealths? Are they subservient to the mercantile interests of communities? Are they but agents to cover the responsibilities of common carriers upon the high seas, or upon the land, as *porters* of infectious diseases? or, are they organized for the protection of *the people* from all that may result in disease, and the consequent loss of life, which, when occurring among the producing classes, constitutes a national calamity?

Such queries are no mere idle suggestions, but are caused by the stern realities which the nation has been called upon to suffer during the past decade; and from which it is urged that vital lessons may be learned, which may be made profitable by a recognition of the violations of the grand sanitary laws, which each outbreak of these infectious diseases exhibits.

In these latter days, the dogma of the dark ages, that plague and pestilence are evidences of the Divine displeasure at the sins of the world, cannot be accepted—nay, while we bow with profound humility before the Majesty from whom all proceeds, while we acknowledge the immensity of the revealed will—we cannot but be impressed with the fact, to be read every where in nature, revealed at all points by science, that fixed and immutable laws govern the world. Laws originating in an all-wise, all powerful and ever existing mind, never to be changed or modified to suit the necessities of mortals. Laws all sufficient for the welfare of each atom, the violation of which is death.

If we deprive our bodies of food and water, death results. If we subject our bodies without clothing to extreme low temperature, death results. If we cast our bodies into deep water, and folding our arms, resign ourselves passively to our fate, death results. Because in each instance, the fixed and unalterable law by which this world is governed, has been disobeyed. The law says, the body deprived of food, heat and air, must die. By the exercise of our will, we have deprived our bodies of food, heat and air, therefore we die.

If an individual sick with small-pox, or other acute infectious disease, be carried into any community in which the disease has not before existed, and no human effort is made to protect that community, an outbreak of the *imported disease* will inevitably result.

If into a healthy community, trunks, boxes, bales, barrels or bundles containing fabrics soiled by contact with small-pox, or other acute infectious disease, and *atmospheric air* of the locality where the disease was in existence; when trunk, box, etc., were closed up, and no human efforts are made for the destruction of the contagion, an outbreak of the disease inevitably results. Because it is a fixed and unalterable law governing the world, that infectious diseases are diffused by means of the contact of unprotected individuals with the specific poison of disease.

That this grand law is exhibited differently by different diseases, that the method by which the virus of these diseases reach individuals is not the same in each and every instance, is no proof that the grand law does not exist. In one form of disease it *may* require absolute personal contact of the healthy with the diseased;

in another, it may require that the specific poison be inhaled with the atmosphere; in another, that it be swallowed with food or drink; but the general application is the same: the grand law by which freedom from disease was to be secured was disregarded and an outbreak of disease was the result.

In this nineteenth century, the surgeon sedulously separates cases, whose wounds emit septic poisons from those which are healthy, and he uses the most exacting precautions that surgical dressings and appliances, employed with one set of cases, do not come in contact with the other set. The obstetrician, in whose care a case of puerperal peritonitis occurs, declines the risk of infecting any other puerperal female. Why? Because both recognize the grand law which governs the diffusion of infectious disease.

The neglect of sanitary laws, by any nation or any community, is punished by disease. What are these sanitary laws? They may be comprehended in but a single word—cleanliness. Cleanliness in everything; cleanliness of the individual person, of families, of communities. Cleanliness of clothing, furniture, rooms, houses and of their surroundings; cleanliness of food, water and air; cleanliness of privies, cesspools and refuse-pits; cleanliness of streets, lanes and alleys; cleanliness of gutters, drains and sewers; cleanliness in the segregation of the diseased.

Disobedience of sanitary law has been punished in the old world by the occurrence of plague, cholera, small-pox, typhoid, typhus, relapsing and scarlet fevers, dysentery, diphtheria, cerebro-spinal meningitis, and a host of lesser evils.

Disobedience of sanitary law has been punished in the new world by the domestication of all the diseases of the old world, save cholera; and by the development of yellow fever.

The necessities of mankind demand an interchange of commodities between nations. The vices of mankind effect an interchange of diseases. But despite the facilities offered, epidemic cholera from the east and yellow fever from the west, have as yet been but occasional visitors beyond their natural habitats, and then only when the fixed and unalterable laws have been violated.

While pestilence and plague ravish the earth, while myriads of human beings are swept from time because of infractions of those immutable laws, the same Omnipotence by whom they were created has placed within the grasp of humanity means by which the grand laws regulating the health of the world may be preserved, or the severity of the penalty for their violation mitigated.

Man, created and placed upon this planet, is raised above and beyond all other created objects in the possession of a mind which enables him to become an absolute free agent. The means of preserving his body and soul alive are placed within his grasp, but of

coercion there is naught. He is permitted to accept and live, or to reject and die, as seems best to himself. But this is only as relates to himself as an individual—no one has received the right to involve any other human being in the punishment which his individual disobedience of known laws entail. We speak of the moral right, which does not exist, while most assuredly the human power does exist, and most disastrously is it often exercised.

Individual contact with the poison producing infectious diseases, is the cause of the reproduction of the respective diseases, and all the human misery which their presence entails; but sanitation has been able to furnish an antidote, by which their ravages may be mitigated, and the disease itself stamped out. One of the most important of these measures is the segregation of infected individuals. Is it not as logical to apply the same measures to masses of individuals, or countries?

When those individuals who arrogate to themselves the positions of sanitarians open their minds sufficiently to absorb all the truths which each succeeding year of epidemics develops—when such persons submit themselves to draw conclusions from the grand mass of facts which may be obtained, and not from their restricted personal observation—when the financial prosperity of commonwealths is made subservient to the necessities of public health—when the interests of a few individuals no longer outweigh those of the masses—when the sanitary interests of communities are controlled by men powerful in knowledge, rather than in polities, then will a sanitary millenium dawn upon the earth, and wide-spread, devastating disease will be unknown—a most utopian dream.

The history of each epidemic of cholera or yellow fever, which has occurred upon this continent, furnishes indubitable evidence that these diseases are of exotic growth, that they have never originated upon the continent of North America, and that they have occurred only after the process of importation had been accomplished.

The machinery of the government is employed to collect customs upon all importations. The schedule of the tariff embraces innumerable articles required for public or domestic use. Yet upon infectious diseases, the embargo is so slight, that the inhabitants of this favored land are constantly exposed to irruptions of diseases which, originating in the old world, are *imported* to devastate the new. It is true that at all ports of entry, quarantine regulations are in force, but save at but two of the great American sea-ports, these quarantine regulations amount to absolutely nothing. The exceptions we make are in favor of the quarantines of the ports

of New York and New Orleans, and of them only during the past few years, when these stations, passing into the hands of men of advanced understanding, the obsolete quarantine of detention has been replaced by the far more efficient quarantine of observation, which ensures the absolute disinfection of vessel and cargo, thus effectually destroying the germs of the disease.

The quarantine regulations of the port of New Orleans require that all large steamships carrying passengers should be provided with a medical officer. That at infected ports all passengers shall be subjected to an examination, and any person found to be predisposed to the disease shall be rejected. That all baggage shall be exposed to the air and disinfected or fumigated as soon as possible after coming on board, and again before arrival at the quarantine station.

That before receiving cargo at infected ports, the vessel shall be thoroughly cleansed and disinfected. That so far as practicable the hatches be kept open, both while in port and at sea, and that every effort be used to fully ventilate all portions of the vessel. That the process of disinfection be repeated every five days and that when the cargo is broken, the hold shall be fumigated with sulphurous acid, or chlorine gas.

That at infected ports, as little communication as possible with the shore shall be allowed the officers and crews of vessels, and that sleeping on deck be permitted to none. That at the close of each day, while in yellow fever ports, all the crew shall wash their entire persons, and leave off all the clothing worn that day, which shall be washed before being again taken into use, and that after leaving port, all mattresses, bedding and clothing be sunned and aired for several hours. This last procedure to be often repeated during the voyage.

All vessels, upon arriving at the quarantine stations, are subjected to an especial process of disinfection, which consists of forcing into the holds large quantities of sulphurous acid gas, by the aid of an apparatus devised by Dr. Alfred W. Perry.

At the same time, carbolic acid is freely used in the bilge, forecastles, etc. After breaking cargo this process is repeated. The detention required is a period sufficiently long to allow ten days to pass between the departure from and arrival at port.

Individuals sick with the infectious disease are removed to hospital, and the detention of the vessel is reasonably prolonged.

How much more reasonable is this than the arbitrary detention of a vessel at a quarantine station, and while there, leaving her crew to their own devices; for, as Dr. White wrote in 1874, "If not probable, it is possible, that unless efficient ventilation and disinfection be practiced, the yellow fever poison in a ship may in-

crease, both in amount and virulence, during the detention at quarantine."

All cases of the disease which may occur in the city, are "stamped out," by the free use of disinfectants, and as a result of this wise precaution, the city of New Orleans is to-day almost free from the disease. Since 1873 no cases of yellow fever have been brought into the city by vessels from foreign ports, while each year the disease has been brought into New Orleans from other unprotected American ports.

At the New York quarantine, under the wise supervision of Dr. S. O. Vanderpoel, health officer of the port, similar results have been obtained. The tedious detention of quarantine is abolished, but the city of New York has been saved from the incursions of exotic infectious diseases. The same precautions which, in 1873, were adopted against cholera, are employed against yellow fever. The health officer's report for 1876, shows that during that year 363 vessels arrived at the New York quarantine station from ports at which yellow fever was prevalent, and that on 99 of these vessels there were cases of that disease. These cases were all cared for at the quarantine station. All the vessels were subjected to a rigid system of disinfection, and no cases of the disease arrived at the city from any vessel.

Impressed with the value of the results obtained by the Louisiana State Board of Health, the late Dr. G. W. Peete, who was for many years the health officer of Galveston, Texas, adopted the same precautionary measures, and obtained the same satisfactory results.

But by whom were these results obtained—to whose exertions are they due? Can they be ascribed to the quarantine institutions? Why, quarantines have been in existence upon the coast of North America for nearly two centuries. Their abuses have driven them into almost utter disrepute. For have they not exhibited the most fearful instances of inhumanity, of shutting up the healthy with those sick from infective diseases? Were any steps taken to remedy the evils of quarantine, until after properly constituted health boards had been established?

The abuses of the New York quarantine were corrected, and the office of health officer of that port was passed into the hands of a high-toned and competent medical man, only after the institution of the Metropolitan Board of Health.

The abuses of the Mississippi river quarantine which, in 1873, passed epidemic cholera into the country, were corrected, and the existing grand system was obtained only after the State Board of Health had grown to sufficient power that, as a body corporate, it could exercise efficient control of all their dependents.

With such marked illustrations before their eyes, with such sad memories upon their hearts, can the General Assembly of the State of Georgia hesitate to clothe their State Board of Health with ample power, which will enable them to institute such measures as may improve the general health of the inhabitants of the State, as well as to protect them from infectious diseases of exotic growth?

Both yellow fever and Asiatic cholera were formerly unknown upon this continent. They were imported—the former in 1693, the latter in 1832. Since the dates named, both diseases have been frequent visitors to North America. Each has swept away scores of victims—each exhibited an inevitable clew to its origin. In each epidemic of these diseases, the specific poison of the disease was imported in vessels from abroad, or, where this could not be proven, the first cases in the outbreak of the disease could invariably be traced to the vicinity of ships from infected ports. The history of the yellow fever epidemic of 1876, in the city of Savannah, presents nothing strange, nothing unusual—it is but the repetition of a story told before, time and again.

As it is our province at this time to treat especially of yellow fever, we have been at the pains to tabulate a statement of all epidemics of the disease which have occurred in the United States since 1693, and as the matter of its importation is alone of value to us at this time, no other data are included.

The authorities from whom these tables are compiled are accessible to all students. By reference the accuracy of our statements may be proved, and the full facts as to each epidemic may be learned.

I. Quarantine on the Southern and Gulf coast, by Assistant Surgeon H. E. Brown, United States Army. A report made in compliance with the requirements of a joint resolution of Congress, approved June 6, 1872.

II. Circular No. 1. Surgeon General's office, 1868. Report on epidemic cholera and yellow fever in the army of the United States during the year 1867, by Surgeon (then Assistant Surgeon) J. J. Woodward, United States army.

III. Vols. 1 and 2, Reports and Papers of the American Public Health Association.

IV. Reports of the Louisiana State Board of Health.

Tabular Statement of Localities in the United States which have been infected with Yellow Fever.

YEAR OF EPIDEMIC.	LOCALITIES INFECTED.	ORIGIN OF THE INFECTION.
1693.	Boston, Mass.	Imported from Barbadoes.
1699.	Philadelphia, Pa.	Imported from Barbadoes.
.	Charleston, S. C.	No record.
1702.	New York City	Imported from St. Thomas.
1705.	Mobile, Ala.	No record.
1713.	Charleston, S. C.	No record.
1728.	Charleston, S. C.	No record.
1732.	Charleston, S. C.	Imported from West Indies.
1739.	Charleston, S. C.	Imported from West Indies.
1741.	Philadelphia, Pa.	Imported from Barbadoes.
1744.	Philadelphia, Pa.	Imported from West Indies.
1745.	Charleston, S. C.	Imported from West Indies.
.	New York City	No record.
1747.	Philadelphia, Pa.	Imported from West Indies.
1748.	Charleston, S. C.	Imported from West Indies.
1762.	Philadelphia, Pa.	Imported from Havana.
.	Charleston, S. C.	No record.
1765.	Pensacola, Fla.	Imported from West Indies.
.	Mobile, Ala.	Imported from Jamaica.
1791.	New York City	Imported from West Indies.
1792.	Charleston, S. C.	Imported from West Indies.
1793.	Philadelphia, Pa.	Imported from St. Domingo.
.	Charleston, S. C.	Imported from West Indies.
1794.	Philadelphia, Pa.	No record.
.	Baltimore, Md.	Carried from Philadelphia.
.	Charleston, S. C.	Imported from West Indies.
1795.	New York City	Imported from St. Domingo.
.	Norfolk, Va.	Imported from West Indies.
.	Charleston, S. C.	Imported from West Indies.
1796.	New York City	No record.
.	Knowles' Landing, Ct.	Imported from St. Domingo.
.	Chatham, Ct	Carried from Knowles' Landing.
.	Wilmington, N. C.	No record.
.	Charleston, S. C.	Imported from West Indies.
.	New Orleans, La.	No record.
1797.	Providence, R. I.	No record.
.	Philadelphia, Pa.	Impt'd from Havana & Port au Prince.
.	Baltimore, Md.	Carried from Philadelphia.
.	Charleston, S. C.	Imported from West Indies.
1798.	Boston, Mass.	No record.
.	Salem, Mass.	Carried from Boston.
.	Portsmouth, N. H.	Carried from Boston.
.	New York City	Imported from West Indies.
.	Norwalk, Ct	Carried from New York.
.	Hartford, Ct	Carried from New York.
.	New London, Ct.	Carried from New York.
.	Philadelphia, Pa.	Imported from St. Domingo.
.	Chester, Pa.	Carried from Philadelphia.
.	Marcus Hook, Pa.	Carried from Philadelphia.
.	Wilmington, Del.	Carried from Philadelphia.
.	Bridgeton, N. J.	Carried from Philadelphia.
.	Woodbury, N. J.	Carried from Philadelphia.
.	City Point, Va.	Carried from Philadelphia.

Tabular Statement.—Continued.

YEAR OF EPIDEMIC.	LOCALITIES INFECTED.	ORIGIN OF THE INFECTION.
1799.	Petersburg, Va. Charleston, S. C. Philadelphia, Pa. Staten Island, N. Y. Charleston, S. C. New Orleans, La.	Carried from City Point. Imported from West Indies. Imported from West Indies. From vessels at quarantine station. Traced to West Indian trade. Importation. Record not attainable.
1800.	Providence, R. I. Baltimore, Md. New Bedford, Mass. Norfolk, Va. Charleston, S. C.	Confined to the vicinity of wharves. Confined to the vicinity of wharves. Imported from Demerara. Imported from West Indies. Traced to West Indian trade.
1801.	Norfolk, Va. Charleston, S. C. New Orleans, La.	No known. Traced to West Indian trade. No record.
1802.	Philadelphia, Pa. Charleston, S. C. New Orleans, La. Baltimore, Md. Boston, Mass. Alexandria, Va. New Haven, Ct. Providence, R. I.	No record. Traced to West Indian trade. No record. No record. No record. No record. No record. No record.
1803.	New York City. Catskill, N. Y. Philadelphia. Norfolk, Va. Charleston, S. C.	Imported from the West Indies. Carried from New York City. Not known. Not known. Traced to the West Indian trade.
1804.	New York City. Charleston, S. C. New Orleans, La.	Imported from West Indies. Imported from West Indies. No record.
1805.	Boston, Mass. New Haven, Ct. Providence, R. I. Philadelphia, Pa. Baltimore, Md. Norfolk, Va. Charleston, S. C.	No record. No record. No record. No record. No record. No record. Traced to the West Indian trade.
1806.	New Orleans, La. New York City. Charleston, S. C. New York City. Charleston, S. C. St. Augustine, Fla. Brooklyn, N. Y. New Orleans, La.	No record. No record. Traced to the West Indian trade. No record. Traced to the West Indian trade. Imported from Havana. Imported from Havana. No record.
1807.	Pert ^o Amboy, N. J. Pensacola, Fla. New Orleans, La.	Imported from West Indies. No record. No record.
1809.	Charleston, S. C. New York City. Charleston, S. C. St. Augustine, Fla. Brooklyn, N. Y. New Orleans, La.	Traced to the West Indian trade. No record. Traced to the West Indian trade. Imported from Havana. Imported from Havana. No record.
1811.	Pert ^o Amboy, N. J. Pensacola, Fla. New Orleans, La.	Imported from West Indies. No record. No record.
1817.	Charleston, S. C. Beaufort, S. C. New Orleans, La. Natchez, Miss. Baltimore, Md.	Imported from West Indies. Carried from Charleston. Imported from Havana. Carried from New Orleans. No record.
1818.		

Tabular Statement—Continued.

YEAR OF EPIDEMIC.	LOCALITIES INFECTED.	ORIGIN OF THE INFECTION.
1819.	New York Quarantine	Imported from West Indies.
	New York City	Confined to vicinity of wharves.
	Baltimore, Md.	Imported from Havana.
	Wilmington, N. C.	No record.
	Charleston, S. C.	No record.
	Mobile, Ala.	Imported from Havana.
	New Orleans, La.	Imported from West Indies.
	Natchez, Miss.	Carried from New Orleans.
1820.	Savannah, Ga.	No record.
	Middletown, Conn.	Carried from Savannah, and imported from Santiago de Cuba.
	Wilmington, N. C.	No record.
	Philadelphia, Pa.	Imported from Santiago de Cuba.
	New Orleans, La.	Imported from Havana.
1821.	Staten Island, N. Y.	Infect'd from vessels at N. Y. Quart'n.
	Norfolk, Va.	Imported from Guadaloupe.
	Wilmington, N. C.	Imported from Matanzas.
	St. Augustine, Fla.	Imported from Havana.
1822.	New York City	Imported from West Indies.
	Pensacola, Fla.	Imported from Havana.
	New Orleans, La.	Imported from Pensacola.
1823.	New Orleans, La.	Imported from West Indies.
	Natchez, Miss.	Carried from New Orleans.
	Brooklyn, L. I.	Carried from New Orleans.
1824.	Charleston, S. C.	No record.
	Key West, Fla.	No record.
	New Orleans, La.	Imported from Havana.
1825.	New Orleans, La.	No record.
	Pensacola, Fla.	Imported from West Indies.
	Natchez, Miss.	Carried from New Orleans.
	Washington, Miss.	Carried from Natchez.
	Mobile, Ala.	No record.
1826.	Norfolk, Va.	Imported from West Indies.
	New Orleans, La.	No record.
	Washington, La.	Imported from New Orleans.
1827.	New Orleans, La.	No record.
	Savannah, Ga.	No record.
	Pensacola, Fla.	No record.
	Charleston, S. C.	No record.
	Mobile, Ala.	No record.
1828.	Savannah, Ga.	No record.
	New Orleans, La.	No record.
	Charleston, S. C.	No record.
	Pensacola, Fla.	Imported in war vessels.
	Washington, La.	Imported from New Orleans.
1829.	New Orleans, La.	Imported by Mexican refugees.
	Mobile, Ala.	No record.
	Natchez, Miss.	Carried from New Orleans.
	Baton Rouge, La.	Carried from New Orleans.
	Opelousas, La.	Carried from New Orleans.
1830.	New Orleans, La.	No record.
1831.	New Orleans, La.	No record.
1832.	New Orleans, La.	Imported from West Indies.
1833.	New Orleans, La.	Imported from West Indies.

Tabular Statement—Continued.

YEAR OF EPIDEMIC.	LOCALITIES INFECTED.	ORIGIN OF THE INFECTION.
1834.	Natchez, Miss.	Carried from New Orleans.
	Baton Rouge, La.	Carried from New Orleans.
	Opelousas, La.	Carried from New Orleans.
	Pensacola, Fla.	Imported in war vessels.
	Charleston, S. C.	No record.
1835.	Charleston, S. C.	No record.
1837.	Mobile, Ala.	No record.
	New Orleans, La.	Imported from Wes Indies.
	Natchez, Miss.	Carried from New Orleans.
	Baton Rouge, La.	Carried from New Orleans.
	Opelousas, La.	Carried from New Orleans.
	Plaquemine, La.	Carried from New Orleans.
1838.	Charleston, S. C.	Imported from Demerara.
1839.	Charleston, S. C.	Imported from Havana.
	Augusta, Ga.	Carried from Charleston.
	St. Augustine, Fla.	Carried from Charleston.
	New Orleans, La.	Impt'd from West Indies and Mexico.
	Mobile, Ala.	No record.
	Pensacola, Fla.	Carried from New Orleans and Mobile
	Tampa, Fla.	Carried from New Orleans.
	Biloxi, Miss.	Carried from New Orleans.
	Galveston, Texas.	Carried from New Orleans.
	Donaldsonville, La.	Carried from New Orleans.
	Waterloo, La.	Carried from New Orleans.
	Plaquemine, La.	Carried from New Orleans.
	Port Hudson, La.	Carried from New Orleans.
	Fort Adams, La.	Carried from New Orleans.
	Natchez, Miss.	Carried from New Orleans.
	Grand Gulf, Miss.	Carried from New Orleans.
	Vicksburg, Miss.	Carried from New Orleans.
	Alexandria, La.	Carried from New Orleans.
	Franklin, La.	Carried from New Orleans.
	New Iberia, La.	Carried from Plaquemine.
	St. Martinsville, La.	Carried from New Orleans.
	Opelousas, La.	Carried from New Orleans.
1841.	New Orleans, La.	Imported from West Indies.
	St. Augustine, Fla.	Imported from Havana.
	Pensacola, Fla.	Imported in war vessels.
	Vicksburg, Miss.	Carried from New Orleans.
1842.	Mobile, Ala.	No record.
	New Orleans, La.	No record.
	Pensacola, Fla.	Imported in war vessels.
	Galveston, Texas.	No record.
1843.	New Orleans, La.	No record.
	Mobile, Ala.	Carried from New Orleans.
	Charleston, S. C.	Imported from Havana.
	Pensacola, Fla.	Imported in war vessels.
1844.	Galveston, Texas.	Imported from Vera Cruz.
	Houston, Texas.	Carried from Galveston.
	Pensacola, Fla.	Imported in war vessels.
1845.	Pensacola, Fla.	Imported in war vessels.
1846.	Pensacola, Fla.	Imported in war vessels.
1847.	New Orleans, La.	Imported from Vera Cruz.
	Galveston, Texas.	Carried from New Orleans.

Tabular Statement.—Continued.

YEAR OF EPIDEMIC.	LOCALITIES INFECTED.	ORIGIN OF INFECTION.
	Pensacola, Fla.	Imported in war vessels.
	Mobile, Ala.	No record.
1848.	Staten Island, N. Y.	Carried from New York Quarantine.
1849.	Charleston, S. C.	Imported from Havana.
1851.	Mobile, Ala.	No record
	Norfolk, Va.	Imported from Havana.
1852.	Charleston, S. C.	Imported from West Indies.
	New Orleans, La.	No record.
	Indianola, Tex.	Carried from New Orleans.
1853.	Philadelphia, Pa.	Imported from Cuba.
	New Orleans, La.	Imported from Jamaica.
	Pensacola, Fla.	Imported from Tampico.
	Tampa, Fla.	Carried from New Orleans.
	Key West, Fla.	Carried from Tampa.
	Mobile, Ala.	Carried from New Orleans.
	Spring Hill, Ala.	Carried from Mobile.
	Citrouelle, Ala.	Carried from Mobile.
	Dog River Factory, Ala.	Carried from Mobile.
	Napoleon, Ark.	Carried from New Orleans.
	Shreveport, La.	Carried from New Orleans.
	Galveston, Tex.	Carried from New Orleans.
	Indianola, Tex.	Carried from New Orleans.
	Washington, La.	Carried from New Orleans.
	Natchez, Miss.	Carried from New Orleans.
	Vidalia, La.	Carried from New Orleans.
	Brownsville, Tex.	Carried from Indianola.
1854.	Norfolk, Va.	Imported in French war vessel.
	Charleston, S. C.	Imported from Havana.
	Wilmington, N. C.	Carried from Charleston, S. C.
	Savannah, Ga.	Imported from the West Indies.
	New Orleans, La.	Imported from St. Thomas.
	Galveston, Tex.	Carried from New Orleans.
	Key West, Fla.	Continued from previous year.
1855.	New York Quarantine.	Imported from West Indies.
	Portsmouth, Va.	Imp. by U. S. war ves. from St. Thomas.
	Milton, Fla.	By clothing of a yellow fever case.
1856.	Charleston, S. C.	Imported from Havana.
	New York Quarantine.	Imported from West Indies.
	Fort Hamilton, L. I.	Carried from quarantine.
	Governor's Island, N. Y. H.	Carried from quarantine.
	New York City.	Carried from quarantine.
1857.	Charleston, S. C.	Imported from Santiago de Cuba.
	New York Quarantine.	Imported from Havana.
1858.	Charleston, S. C.	Imported from Cuba.
	New Orleans, La.	Imported from St. Thomas.
	Galveston, Tex.	Carried from New Orleans.
	Brownsville, Tex.	Carried from Brazos.
	Indianola, Tex.	Carried from New Orleans.
	Brazos Santiago, Tex.	Carried from New Orleans.
1859.	Galveston, Tex.	No record. [Nassau.
1862.	Wilmington, N. C.	Imported on blockade runner from
	Smithville, N. C.	Imported from Nassau.
	Charleston, S. C.	Imported on blockade runners,

Tabular Statement—Continued.

YEAR OF EPIDEMIC.	LOCALITIES INFECTED.	ORIGIN OF INFECTION.
1862.	Key West, Fla.	Imported from Havana.
	Sabine, Texas.	Imported by blockade runner.
	Austin, Texas.	Carried from Sabine.
	Matagorda, Texas.	Imported by blockade runner.
	Indianola, Texas.	Imported by blockade runner.
	Hilton Head, S. C.	Carried from Key West.
1863.	U. S. squadron, N. Orleans	From infected store ship.
	Sabine, Texas	Imported from blockade runner.
	Beaumont, Texas.	Carried from Sabine.
	Houston, Texas.	Carried from Beaumont. [Nassau.
1864.	Charleston, S. C.	Imported on blockade runner from
	U. S. vessels at N. Orleans.	From infected war vessel Virginia.
	Key West, Fla.	Imported from Nassau.
	Galveston, Texas.	Imported on blockade runners.
	New Berne, N. C.	Carried from Charleston, S. C.
	Beaufort, N. C.	Carried from New Berne.
1865.	Key West, Fla.	Imported from Havana.
1867.	New Orleans, La.	Imported from Havana and Vera Cruz
	Pensacola, Fla.	Imported from Jamaica.
	Key West, Fla.	Imported from Havana.
	Dry Tortugas.	Imported from Havana.
	Mobile, Ala.	Carried from New Orleans.
	Indianola, Texas.	Imported from Vera Cruz.
	Galveston, Texas.	Carried from Indianola.
	Houston, Texas.	Carried from Galveston.
	New Iberia, La.	Carried from Indianola.
	Navasota, Texas.	Carried from Galveston.
	Millican, Texas.	Carried from Navasota.
	Chapel Hill, Texas.	Carried from Houston and Galveston.
	Alleytown, Texas.	Carried from Houston.
	LaGrange, Texas.	Carried from Houston and Galveston.
	Victoria, Texas.	Carried from Indianola.
	Goliad, Texas.	Carried from Victoria.
	Corpus Christi, Texas.	Carried from Indianola.
	Rio Grande City.	Carried from Corpus Christi.
	Brownsville, Texas.	Imported from Mexico.
	Jackson, Miss.	Carried from New Orleans.
1868.	Fort McHenry, Md.	From vessels at quarantine.
1869.	Key West, Fla.	Imported from Cuba.
	Hampton Roads, Va.	Imported in a French war vessel.
1870.	Phil'a quarantine station.	Imported from Jamaica.
	Philadelphia.	Carried from quarantine.
	Wilmington, Del.	Carried from Phila. quarantine st'n.
	Mobile, Ala.	Imported from Havana.
	New Orleans, La.	Imported from Honduras.
	New York quarantine.	Imported from West Indies.
	Governor's Island	From infected ship at Atlantic dock,
1871.	New Orleans, La.	Imported from Havana. [Brooklyn.
	Charleston, S. C.	Imported from Bull's Bay, S. C.
	Beaufort, S. C.	Imported from Bull's Bay, S. C.
	Cedar Keys, Fla.	Imported from Havana.
	Tampa, Fla.	Carried from Cedar Keys.
	Hampton Roads, Va.	Carried on schooner from Charleston.

Tabular Statement—Continued.

YEAR OF EPIDEMIC.	LOCALITIES INFECTED.	ORIGIN OF INFECTION.
1872.	New Orleans, La.	No record.
1873.	New Orleans, La.	Imported from Havana.
	Memphis, Tenn.	Imported on tug "Bee" from N. O.
	Mobile, Ala.	No record.
	Tortugas.	Imported from Havana.
	Shreveport, La.	Carried from New Orleans.
	Pensacola, Fla.	Imported from Havana.
	Montgomery, Ala.	Carried from Pensacola.
1874.	New Orleans, La.	Imported from Havana.
	Pensacola, Fla.	Imported from Havana.
	Pascagoula, Miss.	Imported from West Indies.
1875.	New Orleans, La.	Carried from Pascagoula, Miss.
	Fort Bananas, Fla.	Imported from Havana.
	Coushatta, La.	Carried from New Orleans.
	Pascagoula, Miss.	Imported from Havana.
	East Pascagoula, Miss.	Imported from Havana.
	Seranton, Miss.	Carried from Pascagoula.
	Moss Point, Miss.	Carried from Pascagoula.
	Ocean Spring, Miss.	Carried from Moss Point.
	Biloxi, Miss.	Carried from Moss Point.
	Bay St. Louis, Miss.	Carried from Pascagoula.
	Port Eads, La.	Carried from New Orleans.

NOTE.—The record of 1876 is omitted for sufficient reasons. It is by no means thought that the items of this table are absolutely correct. The author will gladly acknowledge any notes of correction or of addition which he may receive.

From these tables it will be seen that yellow fever has been carried into the following Atlantic and Gulf ports:

Boston, Mass.—During four years.
Providence, R. I.—During four years.
New York—During twenty-one years.
Philadelphia, Pa.—During seventeen years.
Baltimore, Md.—During seven years.
Norfolk, Va.—During ten years.
Wilmington, N. C.—During six years.
Charleston, S. C.—During forty-four years.
Savannah, Ga.—During four years.
Mobile, Ala.—During sixteen years.
Pensacola, Fla.—During twenty-two years.
New Orleans, La.—During forty-one years.
Galveston, Texas.—During nine years.

This refers simply to years in which the disease obtained some epidemic foothold at the ports named. How many times infected vessels arrived at the quarantine of each port, is impracticable to determine.

Boston, Mass.—Was infected with yellow fever in 1693, 1798, 1802 and 1805.

Providence, R. I.—Was infected in 1797, 1800, 1802 and 1805.

New York was infected in 1702, 1745, 1791, 1795, 1796, 1798, 1799, 1803, 1804, 1806, 1807, 1809, 1819, 1821, 1822, 1823, 1848, 1855, 1857, 1870.

Philadelphia was infected in 1699, 1741, 1744, 1747, 1762, 1793, 1794, 1797, 1798, 1799, 1802, 1803, 1805, 1820, 1853, 1870.

Baltimore was infected in 1794, 1797, 1800, 1802, 1805, 1818, 1869.

Norfolk, Va., was infected in 1795, 1800, 1801, 1803, 1805, 1821, 1826, 1852, 1854, 1855.

Wilmington, N. C., was infected in 1796, 1819, 1820, 1821, 1854, 1862.

Charleston, S. C., was infected in 1699, 1713, 1728, 1732, 1739, 1745, 1748, 1762, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1799, 1800, 1801, 1802, 1803, 1804, 1805, 1806, 1807, 1817, 1819, 1824, 1827, 1828, 1834, 1835, 1838, 1839, 1843, 1849, 1852, 1854, 1855, 1856, 1857, 1858, 1862, 1864, 1871.

Savannah, Ga., was infected in 1820, 1827, 1828, 1854.

Mobile, Ala., was infected in 1705, 1765, 1819, 1825, 1827, 1829, 1837, 1842, 1843, 1847, 1851, 1853, 1867, 1870, 1873.

Pensacola, Fla., was infected in 1765, 1811, 1822, 1825, 1827, 1828, 1834, 1839, 1841, 1842, 1843, 1844, 1845, 1846, 1847, 1853, 1867, 1873, 1874, 1875.

New Orleans, La., was infected in 1795, 1799, 1801, 1802, 1804, 1805, 1809, 1811, 1817, 1819, 1820, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1837, 1839, 1841, 1842, 1843, 1847, 1852, 1853, 1854, 1858, 1863, 1864, 1867, 1870, 1871, 1873, 1874, 1875.

Galveston, Texas, was infected in 1839, 1842, 1844, 1847, 1854, 1858, 1859, 1864, 1867.

Such tables are replete with practical suggestions, one of the most important of which is the evident refutation given by the figures to the theory of the local origin of the disease. The record as it relates to the city of Charleston is taken as a striking example. Yellow fever did not occur at that city until six years had passed after it had been imported into Boston, Mass., and the years of epidemics and the years of freedom from the disease read as follows:

Years of Epidemic.	Years of no Epidemic.	Years of Epidemic.	Years of no Epidemic.
1699	1700 to 1713	1824	1825 to 1827
1713	1714 to 1728	1827 and 1828	1829 to 1834
1728	1729 to 1832	1834 and 1835	1836 and 1837
1732	1733 to 1739	1838 and 1839	1840 to 1843
1745	1746 to 1748	1843	1844 to 1849
1748	1749 to 1792	1849	1850 to 1852
1792 to 1807	1808 to 1817	1852	1853
1817	1818	1854 to 1858	1859 to 1862
1819	1820 to 1824	1862	1863
		1864	1865 to 1871
		1871	

Therefore, in a period of one hundred and seventy-two years, Charleston was infected with yellow fever but forty-one years.

Why these seasons of infection and exemption from the disease are so marked, it will be our endeavor to show.

Of the early epidemics of yellow fever, no records are to be found save such fragmentary accounts as may be gathered from private letters of the period. In them the disease is designated as the Barbadoes distemper, and that "whenever the disease appeared, it was easily traced to some person who had lately arrived from the West Indian Islands, where it was epidemic." (Dr. Lining, quoted by Brown, p. 23.)

Dr. Brown has shown (p. 23) "that from about 1728, the commerce of Charleston with the West Indies had attained considerable proportions, and that there were many arrivals at the port from the West Indies every year; but, towards the last of this period, this trade had been gradually growing less, in consequence of the unjust restrictions placed on the trade of the colonies by Parliament, in the various navigation acts, and other measures, tending towards a commercial monopoly. By 1750 the trade had almost entirely ceased; and it was not revived until the independence of the United States was secured, and affairs settled down once more on a quiet basis. By a singular coincidence, yellow fever disappears from the annals of Charleston during the whole of this long period, and only makes its appearance again in 1793, when the trade had again become large with the West India ports."

From 1792 to 1807, a period of fifteen years, the city suffered constantly from the disease.

We again quote Dr. Brown :

"The local hygienic conditions of Charleston have always had a most important bearing upon the spread of the disease, and, as believed by many of her ablest practitioners, upon its origin.

"The city situated at the junction of the Ashley and Cooper rivers with the bay is on very low ground, the average fall in drain age being not more than five feet. In early times, and to some extent still, there were numerous salt marshes extending from the river towards the town, and to a considerable extent within the limits of the city. These were washed twice a day by the tides, and as long as they were left alone did not seem to be deleterious to the general health; and, previous to their being filled in, the yellow fever was confined to what is known as Old Charleston, in the southeastern part of the city. Gradually, however, as land became more valuable, by the natural extention of the town, many persons owning lots on these salt marshes filled them in, thus destroying the natural drainage in the vicinity. The material used for this purpose was often of a highly injurious character, consisting of old wood, offal, the debritis from the drains, and filthy dirt heaps, thus making a vegetable compost of highly putrefying capacity to be exposed to the hot sun. In every case where this has been done, yellow fever has extended its area over the newly filled localities, until now there is hardly any portion of the city that can be considered exempt.

"For the last seventy years the condition of the drains, privy-vaults, latrines, sewers and yards around the houses has been such as to call forth severest comments from all that have interested themselves in the health of the city. Offal and garbage, and the debritis of cow-yards, have been openly placed in the streets; the drains have not unfrequently been opened in summer to be cleaned, and their contents strewed over the surface to fill up vacant lots. * * * * * Still another source of disease is the large number of burial places in the most thickly settled portions of the city. These are very much crowded, and often in the heat of summer exhale the most offensive odors."

Is it, then, to be wondered that the disease was so long present in that fated city? Is it, then, to be wondered that many of the most prominent physicians embraced the local origin theory? Is it not rather to be wondered that the disease has not taken up its abode at Charleston? It is, however, possible to trace the majority of these epidemics to the arrival of vessels from infected West Indian ports.

It is a matter of record, that the hygienic condition of this city was frequently and earnestly reported to the civil authorities by the health officers, but without effecting any important changes. The *Charleston News and Courier*, of January 11, 1877, contains the record of a meeting of the board of health, and we abstract the following from the report of the registrar then presented:

"STREET GARBAGE AND FILTH.—The filling of lots, portions

of streets and other places, with the garbage of the scavengers' gathering of the city is a nuisance, and must ever be a continued cause of disease, in winter and summer. The experience of our eminent physicians, from 1798 to the present day, concur in opinion that this practice has been a prolific cause of malignant and yellow fever in this city under high temperature. The few cases of the past summer can be traced, in nearly every case, to these garbage vats, or fermenting deposits. The attention of the board is specially invited to this head."

Had the State of South Carolina an efficient board of health this state of affairs would long since have been remedied by the strong arm of the law.

The history of yellow fever, as it affected the city of New Orleans, is almost identical with that of the city of Charleston. But Charleston was infected with yellow fever 96 years before the disease reached New Orleans, and during those years Charleston had 12 distinct epidemics.

So frequently has yellow fever been imported into New Orleans since 1796, and so often has it therein held uninterrupted sway that, taking into consideration the topography of the city, and the character of a very large class of her inhabitants, it may be within the range of possibility, as claimed by many of her medical men, that in certain localities the disease has become domesticated, and that each year so-called *spasmodic cases of yellow fever* may occur independently of importation. Be this as it may, the board of health has demonstrated its ability to cope with the disease, and to stamp it out wherever or whenever it may appear.

If health authorities can control yellow fever whenever it may appear at the ports of New Orleans and New York, and we think that it has been fully demonstrated that they can so control the disease, why may not the same preventative measures be adopted at Charleston, Savannah and all other ports?

Upon a previous page we stated that, although the cost of maintaining a properly constituted health office would be large, that it would sink into absolute insignificance when compared with the cost of one epidemic of an acute infectious disease occurring in any large city. This has been again and again demonstrated. In volume II. of the Reports and papers of the American Public Health Association will be found a most elaborate paper by Dr. Benjamin Lee, of Philadelphia, in which it is shown that the epidemic of small-pox of 1871 and 1872 cost that city a total of \$21,848,977.99.

We shall attempt nothing so elaborate as regards the late epidemic at Savannah. We will endeavor to keep all our estimates

strictly within or below the line of probability, trusting that by so doing it may, in reality, make a stronger exhibit.

In attempting to estimate the cost of an epidemic of an acute infectious disease in any community, it is necessary to take into consideration all the items of cost which may really have occurred. We will, therefore, present our estimate of the cost of the yellow fever epidemic of 1876, to the city of Savannah and the State of Georgia, under the following heads:

I.—THE LOSS, BY THE EXPENDITURES OF OVER 8,000 REFUGEES.

Experience has taught the residents of our Southern seaport towns, that at the outbreak of an epidemic of yellow fever, safety is to be obtained in a prompt removal from within the limits of the lines of infection. Therefore, when an epidemic is announced an exodus of the better classes of the community takes place. All who are possessed with sufficient means, and the ability to employ them, make haste to escape. The houses of the majority of the better classes are closed, and of necessity, all expenditures therefrom cease. Servants are discharged to shift for themselves. All classes of trades-people suffer from the loss of patronage.

The number of refugees from the city of Savannah was estimated by a writer in the *Savannah Morning News*, of October 30, 1876, at about 8,000 individuals, and the same authority estimates the loss to the city, in their expenditures, at \$500,000.

A careful consideration of this subject, aided by an elaborate calculation of items, leads us to accept this estimate as an approximation to the truth, and as being rather under than in excess of the actual amount, as we were at one time led to think.

II.—THE LOSS IN SALES OF MERCHANTISE.

The article of the *Morning News*, already quoted, estimates this amount at \$500,000, and we accept the figures.

In this calculation, all estimates as to the losses of dealers who were properly considered in the former calculations were excluded, and the losses of wholesale merchants and the shipping interests, save those of cotton dealers, are taken up.

III.—THE LOSS BY THE DIMINUTION OF COTTON RECEIVED FOR EXPORT.

Although the epidemic did not entirely arrest the delivery of cotton at the Savannah market, still it most seriously interfered with the trade, and large quantities of that staple were diverted to other ports.

The actual loss was estimated by the writer in the *Morning News* at \$50,000, but the epidemic lasted an entire month after that estimate was made, and we are led to think that it would be no exaggeration to add thereto the sum of \$25,000, making a total loss of \$75,000.

IV.—THE LOSS TO RAILROAD COMPANIES BY THE DIMINUTION OF TRAFFIC.

It is too soon after the epidemic storm to be able to obtain full data upon which to base an accurate estimate of this loss, but we have been informed by a gentleman largely interested in the railroads leading into the city of Savannah, that the sum of \$200,000 would not cover the losses which such companies have sustained.

V.—THE LOSS IN RENTS AND THE DEPRECIATION OF PROPERTY.

The loss under this head was estimated by the *Morning News* at \$250,000. To that amount, in consideration of the prolonged existence of the disease, we would add the sum of \$50,000, making a total loss under this head of \$300,000.

But will the sum of \$300,000 cover alone the actual depreciation of property?

VI.—THE LOSS OF TAXES TO THE CITY.

The *Morning News* estimates this loss at \$50,000, and we may presume that the estimate is correct.

VII.—THE LOSS OF TAXES TO THE STATE.

The State tax upon Chatham county in 1876 was \$110,534.23. The larger portion of this tax—nay, almost the entire amount—was to have been paid by the city of Savannah. Upon inquiry at the office of the Comptroller General, we learn that but \$10,000 has been paid, leaving a debt of \$100,534.23.

VIII.—THE LOSS TO PROFESSIONAL MEN.

A severe epidemic of any infectious disease is inevitably disastrous to all professional men depending upon the daily practice of their professions, while it arrests the incomes of all others.

Upon none does this burden fall more heavily than upon medical men, for, while their revenues are either destroyed or most seriously diminished, their professional cares and responsibilities are infinitely increased. It is estimated that there were at least 15,000 sick in the city of Savannah during the prevalence of this epidemic. To each of this 15,000 it would not be an over-estimate to assign 5 visits, which, at \$3.00 per visit, would amount to \$225,000, of which amount probably not over \$20,000 will ever be collected.

But medical men were not alone the sufferers—clergymen, lawyers, and literary men of all grades were affected, and it is not considered an over-estimate to place their united losses at \$300,000.

IX.—THE LOSS TO HOTEL PROPRIETORS.

It is very important to take into consideration the losses of individuals of this class. The employes of hotels are so numerous, and the daily expenditures of such establishments are so large, that many individuals in every community are directly influenced by the good or bad fortune of the proprietors.

After consultation with a gentleman of large experience in this business, we are led to estimate this loss at \$25,000.

X.—THE LOSS OF WAGES TO THE WORKING CLASSES.

During the epidemic of 1876, a census was taken by the police authorities, by which it was determined that there were 11,614 negroes and 7,353 whites, constantly residing in the city of Savannah. Of these 18,967 individuals it is by no means an unfair estimate to say that 12,644, or two-thirds of the entire number, were, by the epidemic, deprived of their ordinary means of obtaining their support, and were obliged to subsist upon public or private charity. Estimating the daily earnings of this number of individuals at \$1.00 per day, for the ninety days during which the disease lasted, and we have a total loss of \$1,137,960.

XI.—THE LOSS IN HUMAN LIFE.

It is hard to place a money value upon human life, but as producers and consumers, human beings represent a certain value in money to the State. This value has been estimated by various writers at figures ranging from \$500 to \$9,000. Taking into consideration the value of skilled labor in all communities, and the influence which such labor has upon the value of personal and real estate, the estimate must of necessity be an arbitrary one. In this instance, being desirous of keeping our figures as near the truth as possible, we will estimate the value of an adult life at \$2,000, and that of a minor at \$500.

The absolute figures of the mortality of this epidemic are not as yet at our command. The supplement of the *Morning News* of November 28, 1876, gives the total deaths during August, September, October and November of that year at 1,574, of which 940 were from yellow fever, and 634 from other diseases. Of this number 1,104 were adults, and 470 were minors.

From the annual report of the Mayor of Savannah, published in the *Morning News* of January 8, 1877, we abstract the following items, of the report of Dr. William Duncan on vital statistics, yet to be published: "During the epidemic there were reported deaths from all causes 1,351, of which 910 were from yellow fever;" and in this report we find it stated, that a large proportion of the deaths ascribed to other causes, were, in all probability, genuine cases of yellow fever. We are unable to make any classification from this report in its present fragmentary condition, and therefore must use those furnished by the *Morning News*, and which we first noticed—1,104 adults at \$2,000—\$2,208,000, and 470 minors at \$500—\$235,000, making a total money loss of \$2,443,000.

XII.—THE LOSS FROM EXPENSES OF THE INTERMENT [OF THE DEAD.

Estimating the cost of each of the 1,574 interments at the low figure of \$20, we will have a total cost of \$31,480.

XIII.—THE LOSS IN THE CARE OF THE SICK.

It has been estimated, that during the epidemic at Savannah, there was a total of 15,000 cases of sickness. It becomes a question of some importance to determine the cost of their maintenance. We will estimate that the very large proportion of this number were subsisted upon public charity, and therefore must not be included under this head; but it is by no means an unfair estimate to take one-fourth of the entire number, or 3,750 individuals, who were subsisted by their private means. If to this number we allow an average of twenty days' illness and convalescence, we will have a total of 75,000 days, which, at a per diem of 50 cents, surely a low estimate for the subsistence and care of the sick, will yield a total cost of \$37,500.00.

XIV.—THE LOSS IN THE COST OF SPECIAL SANITARY WORK.

We have been informed by the Hon. E. C. Anderson, Mayor of the city, that \$41,000 was expended by the city authorities for such work, during the epidemic.

XV.—THE LOSS IN THE AMOUNT OF EXPENDED PUBLIC CHARITY.

We have been informed by responsible persons, that the sum of \$120,883 was expended in public charities.

TOTAL ESTIMATES.

I. Loss by the expenditures of over 8,000 refugees.....	\$ 500,000
II. Loss in sales of merchandise.....	500,000
III. Loss in diminution of cotton for export.....	75,000
IV. Loss to railroad corporations.....	200,000
V. Loss in rents and in depreciation of property.....	300,000
VI. Loss of taxes to the city	50,000
VII. Loss of taxes to the State	100,534
VIII. Loss to professional men	300,00
IX. Loss to hotel proprietors.....	25,000
X. Loss of wages to the working classes.....	1,237,960
XI. Loss in human life.....	2,443,000
XII. Loss in interment of the dead.....	31,480
XIII. Loss in the care of the sick.....	37,500
XIV. Loss in the cost of special sanitary work.....	41,000
XV. Loss in amount expended in charity.....	120,883

\$5,862,357

Against this loss of \$5,862,357, what is placed? The answer we will not attempt.

In attempting to condense a subject of such magnitude into the space your patience would grant us, it has been impossible to deal other than in generalities; in assertions of truths, rather than elaborate arguments, and arrays of facts to demonstrate that they are truths. We have, however, endeavored to substantiate the truth that sanitation is an essential adjuvant to national prosperity; and we assert that if the great law of nature be recognized, that human intercourse is the efficient means by which infectious diseases are diffused throughout the world; if it be recognized that the most fearful of acute infectious diseases known upon this continent are of exotic growth, and only appear in America after they have been imported, then measures may be perfected by which their importation may be arrested. For America stands isolated, surrounded by great bodies of water, having a hemisphere to herself; she is in position to bid defiance to the filth-engendered diseases of other nations. It is very true that the habitat of yellow fever is not far distant from her shores, yet the distance is sufficiently great for all practicable purposes.

And we would reproduce and assert the truth of the statement of Dr. Brown (page 89 of his report) that "peculiar meteorological conditions, defective drainage, poisonous gases, rotting vegetable debris, can no more originate yellow fever than they can smallpox; but they may so vitiate the vital capacity for resisting disease as to render the organism peculiarly receptive to the influences of a morbid poison."

We would go further, and suggest that an atmosphere thus impregnated is a suitable nidus, in which the poison of yellow fever may indefinitely reproduce itself; that the atmosphere of any locality may be thus charged with the poison, and that the process once fully established, it can only be arrested by a lowering of the temperature to at least 32° Farh. Should no such change of temperature occur, the disease may hold over indefinitely. Its virulence may become modified by the occurrence of strong winds, which may so dilute the atmosphere of any locality that, for the time being, the progress of the disease may be arrested; but with first calm, the process of germination again takes place.

Finally, we would maintain that morbid influences are in great measure, if not entirely, within the grasp of humanity, and that the great agents by which they may be destroyed can efficiently be handled by health organizations alone.

